Appl. No. 09/775,715
Reply dated January 22, 2004
Reply to Office Action mailed October 22, 2003

REMARKS

The present application and its claims are directed to a document ranking system based on user behavior and a document searching system based on user behavior. Claims 1-32 are pending with no claims being amended and Claims 27- 32 being added.

PRIOR ART REJECTION

In response to the Examiner's rejection of Claims 1- 26 under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,855,015 to Shoham (hereinafter "Shoham"), Applicant respectfully traverses the rejection. In particular, the claims of the application are not rendered obvious by the prior art cited by the Examiner for the reasons set forth below. Therefore, Claims 1-26 (and new Claims 27 – 32) are allowable over the prior art cited by the Examiner.

Claim 1 - 12

Independent Claims 1, 4, 7 and 10 recite a system and method for user behavior based ranking of a document. None of these claims are rendered obvious by Shoham. In particular, Claims 1 and 4 are patentable over Shoham because they recite determining a feature vector and then "modifying the feature vector for the document based on a sample of user actions captured during a search session so that the document is more highly ranked in response to the user actions." The prior art does not disclose or suggest this combination of elements.

Shoham does in fact generate a feature vector for a document. See Col. 11, lines 21-27. However, Shoham does not disclose or suggest modifying the feature vector of the document based on a sample of user actions captured during a search session. To support the above rejection, the Examiner cited Col. 12, lines 28-35 of Shoham which describes that each page (having a document feature vector $\vec{V}$) is viewed by the user and receives an evaluation e_i (with an integer range of –5 to +5) which is then applied to a current query model (represented by query vector $\overline{M}$) of the user to modify the query vector so that the query vector is adjusted to return better search results to the same user. This is shown explicitly by the equation $(\overline{M} \rightarrow \overline{M} + \sum_{i=1}^{p} e_i \overline{V_i})$ at Col. 12, line 32. Thus, this portion of Shoham describes that the search/query vector is modified by the user evaluation. Shoham does not describe, however, that the document feature vector ($\overline{V}$) is modified at all.

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Furthermore, Shoham teaches away from the claimed invention. In Shoham, the modification of the query vector causes the query vector (for the particular user) to return better query results on subsequent queries of the particular user. The modification of the query vector in Shoham, however, would have no effect on the queries of other users. In contrast, the claimed modification of the document vector for a particular document results in the particular document being more highly ranked for any user that submits a query that returns that document (including the original user that submitted the original query). Thus, the claimed modification of the document vector and Shoham's modification of the query vector are very different and are not analogous so Shoham teaches away from the claimed modification of the document feature vector. Thus, Shoham does not suggest the invention as recited in Claims 1, 4, 7 and 10. Therefore, Claims 1, 4, 7 and 10 are allowable over Shoham. Furthermore, Claims 2-3, 5-6, 8-9 and 11-12 which depend from Claims 1, 4, 7 and 10 are also allowable for at least the same reasons as above.

Claims 13 – 26

Independent Claims 13 and 20 are allowable over Shoham as Shoham does not disclose or suggest the claimed invention. In particular, these claims are allowable for at least the same reasons as Claims 1, 4, 7 and 10 set forth above. Furthermore, these independent claims recite "sampling user search behavior" and "updating the feature vector of the document based on the sampled user search behavior so that the rank of the document is changed based on the user sampled user search behavior." Shoham does not disclose or suggest these features set forth in these claims. As above, Shoham does not disclose or suggest modifying the feature vector of the document nor does Shoham suggest "updating the feature vector of the document based on the sampled user search behavior so that the rank of the document is changed based on the user sampled user search behavior" as set forth in the claims. Therefore, Claims 13 and 20 are allowable over Shoham.

Claims 14 – 19 and 21-26 (which depend from these independent claims) are allowable for at least the same reasons as set forth above. Furthermore, Claims 14 and 21 (which depend from Claims 13 and 20) are allowable because they recite that "the sample of the user behavior further comprises a query feature vector of the terms in a particular query and the feature vector of the one or more documents returned based on the query and viewed by the user." This feature

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is not shown or suggested by Shoham. Shoham does discloses that 1) the user provides an evaluation of each document viewed (See Col. 12, lines 28- 39); or 2) the system monitors the length of time that a document is viewed by the user (See Col. 9, lines 2-8) in order to generate user feedback. However, Shoham does not suggest that "the sample of the user behavior further comprises a query feature vector of the terms in a particular query and the feature vector of the one or more documents returned based on the query and viewed by the user" as claimed.

Claims 15 and 22 further recite "wherein the sample generating further comprises generating a sample during a sampling frequency" which is not shown or suggested by the prior art.

Claims 18 and 25 further recite "wherein the scaling further comprises generating a negative scaling factor in response to a short viewing time so that the scaled query feature vector is negative and the feature vector of the document is reduced and the rank of the document is reduced" which is not shown or suggested by the prior art cited by the Examiner. Finally, Claims 19 and 26 further recite "wherein the scaling further comprises generating a positive scaling factor in response to a long viewing time so that the scaled query feature vector is positive and the feature vector of the document is increased and the rank of the document is increased" which is also not shown or suggested by the prior art cited by the Examiner. Therefore, the claims which depend from Claims 13 and 20 are allowable for these additional reasons.

New Claims 27 - 32

These new claims are allowable for at least the same reasons as the independent claims from which they depend. Furthermore, each of these new claims recite "sampling the actions of a plurality of users in order to modify the feature vector for the document" or "sampling the user search behavior of a plurality of users" which is not suggested by Shoham. In particular, Shoham discloses that a query vector for a particular user is modified. However, Shoham does not disclose that the actions of a plurality of user are sampled in order to modify the feature vector for the document. Therefore, Claims 27- 32 are allowable over Shoham.

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<div align="center">CONCLUSION</div>

In view of the above, it is respectfully submitted that Claims 1- 32 are allowable over the prior art cited by the Examiner and early allowance of these claims and the application is respectfully requested.

The Examiner is invited to call Applicant's attorney at the number below in order to speed the prosecution of this application.

The Commissioner is authorized to charge any deficiencies in fees and credit any overpayment of fees to Deposit Account No. 07-1896.

Respectfully submitted,

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Dated: January 21, 2004   By _____
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